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How Alliances Reshape Competition

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Alliances are intended to help firms *cooperate* better and also to help them *compete* better. Are these two objectives always compatible? How are they balanced in alliance strategy? And, more broadly, how does the spread of alliances affect the dynamics of competition? These questions go to the heart of the role of alliances in the organization of industry—a subject that attracted some early research but that has been ignored of late in favor of studies on the internal workings of alliances. These studies have paid off handsomely, but precisely because of this, it is now time to redirect our attention back to the broader questions of how alliances reshape competition.

This chapter proposes a way to think about the interaction between alliances and competition. It begins by reviewing what the literature in industrial organization has had to say about this question. The short answer is “not much”; alliances were a late addition to the research agenda in industrial organization. More recently, alliances have been dealt with routinely in analyses of firm boundaries; this is forcing a new way

of thinking about competition. I will argue that competition increasingly takes the form of groups of allied firms against other groups instead of the traditional battle of firm versus firm. This kind of competition is different from that assumed in standard models of industrial organization and of strategy. Understanding this new kind of competition requires us to broaden our unit of analysis and to consider explicitly the various ways in which competition and cooperation interact. (For related work and precursors to this paper, see Gomes-Casseres, 1996 and 2003.)

Comments on a Fragmented Literature

The study of alliances is rooted in the field of industrial organization (IO), much as is the case with the study of strategy and of the multinational enterprise. Our modern understanding of alliances draws on the theory of the firm, a late-developing branch in IO; empirical work on

alliance formation and performance often echoes IO studies of firm behavior.

Black Boxes and Contrarians. The IO field was not always fertile ground for students of interfirm alliances. Traditionally, the field of industrial organization studied markets and firms, and nothing in between. In fact, even when it studied firms, it usually treated them as “black box” decision makers that maximize profit subject to external constraints.

One of the most widely used textbooks in the field explains that this is done to simplify the analysis and focus attention on market behavior (Tirole, 1988). The 1989 *Handbook of Industrial Organization* attempts to begin redressing this gap with four opening chapters on the theory of the firm, but even so, most of the rest of this two-volume work reflects the dominant approach in the field at the time (Schmalensee & Willig, 1989). Though I cannot claim to have read this handbook cover to cover, it appears that the only treatment of any form of alliance in this work is a four-page discussion of joint ventures as mechanisms for collusion (pp. 437–441).

Leading IO models of the firm typically assumed away the alliance phenomenon. The classic work by Williamson (1975) and the fundamental paper by Grossman and Hart (1986) explicitly model the choice facing the firm as integration and nonintegration, with no gray zone in between. This, again, is perhaps useful for the analysis at hand and certainly makes the math more tractable. But it did not help those scholars who were puzzled by the empirical evidence that alliances were widespread in business.

As a result, the first IO-oriented papers on alliances have a distinct “contrarian” feel to them. Here is Richardson’s plea in 1972:

I hope to show that the excluded phenomena [various forms of interfirm cooperation and affiliation] are of importance and that by looking at industrial reality in terms of a sharp dichotomy between the firm and market we obtain a distorted view of how the system works.

His paper then makes the argument, still very much alive in the literature today, that alliances are ways for firms with dissimilar capabilities to coordinate production of complementary goods. Richardson’s logic and observations notwithstanding, Mariti and Smiley (1983) ten years later still complained that “cooperative agreements have received almost no attention in the academic literature.”

This last statement was not altogether true; or rather, it applied only to the academic literature in mainstream IO and microeconomics. Scholars in the field of international business had long since discovered alliances and joint ventures, though their approach was more empirical and eclectic. Stopford and Wells (1972) had the advantage of massive data on the foreign subsidiaries of multinational enterprises, where it could be readily seen that roughly one third of the ventures were jointly owned. They had no data on contractual alliances, but it was clear from the start that most of these joint ventures were not fully controlled by either partner. Their explanation was that the firms sought a delicate balance between a “need for resources” and a “need for control.” In a way, this fundamental argument foretold today’s seemingly unending debate about what best explains alliances: transaction cost theory (control) or the resource-based view (resources); the answer, clearly, is “both.” Scholars in this international business tradition later developed comprehensive approaches to alliances, such as Hennart (1989), Kogut (1988), and others.

Catching up With Reality. By the 1990s, mainstream IO and microeconomics had also begun to “discover” alliances. The theory of the firm branched out to become a field by itself—that of organizational economics. Modern scholars in this field are concerned with transaction costs, contracts, principal-agent relationships, incentives, information, and many other aspects of firm organization. These concepts are equally relevant to the study of alliances, as the work in this volume shows. In their 1998 “revisit” of the boundaries of the firm, Holmstrom and

Roberts proclaim that “investment incentives are not provided by ownership alone” and discuss evidence from Japanese subcontracting, exclusive sourcing, airline alliances, and contractual networks. Shortly thereafter, Baker, Gibbons, and Murphy (2002) provided new impetus for an ongoing stream of theoretical work on alliances as relational contracts. In addition, a stream of new econometric work is testing how alliances act as “intermediate” forms of governance between arm’s-length contracts and full integration (e.g., Gomes-Casseres, Jaffe, & Hagedoorn, forthcoming).

This has brought us to a curious juncture. Industrial organization first assumed that firms were black boxes and developed an elaborate set of models around how these boxes behaved in the market. The black boxes are now being opened. Does this new knowledge of the internal workings of firms change our understanding of how firms behave in the market? It should. The histories of large firms and the study of the multinational enterprise have shown that structure can shape strategy, let alone performance. The research agenda here is clear: We must find ways to marry the internal and external workings of firms.

In this marriage of internal and external, alliances play an interesting role. Traditionally, the firm has been one of the standard units of analysis in IO.¹ As we use organizational economics to open this unit, we are also finding that the unit itself may be misleading—instead of firms operating in a market, we now see pairs or groups of allied firms operating in the market. And if the internal workings of a firm can be expected to influence the firm’s behavior in the market, would this not be true also of the internal workings of the firm’s alliances?

The problem is that while theory is catching up with the reality of how firms and alliances are organized, it is still way behind in explaining how alliances affect market dynamics. And reality is not standing still. In an increasing number of businesses, alliances between firms are transforming the nature of competition and of strategy. Take the case of airlines: Star, Oneworld, and Sky Team

are “constellations” of allied firms that compete against each other. Each of these constellations is composed of individual firms, but the firms coordinate their actions when they compete together as a group. There are other contemporary examples in automobiles, telecoms, multimedia entertainment, and elsewhere.

To understand this new kind of industry structure—one where cooperation and competition are combined in complex ways—we need to step back to question our very framework of analysis. Is the firm, even though now an “open box,” the right unit of analysis? And is firm-to-firm, oligopolistic competition the right context for this analysis? I will make the case below that the spread of alliances calls for changing both of these elements of the traditional approach to industrial organization.

From Firms to Constellations

The idea that the firm may not be an appropriate unit of analysis is not wholly new. Ronald Coase himself presaged it when he wrote in a footnote in his 1937 article that “it is impossible to draw a hard and fast line which determines whether there is a firm or not. There may be more or less direction” (Coase, 1937, fn. 1, p. 392). Edith Penrose (1995), writing in 1959, clearly recognized the problem of relying on the traditional definition of the firm, but she seemed at a loss as to how to deal with administrative influences that extended beyond firms:

For an analysis of economic power there is no doubt that the industrial firm is not the most relevant unit; indeed individual men as well as corporations may extend their economic power by extending their ownership interests, [but] an attempt to define the firm according to power groupings would produce too amorphous a concept to handle. (p. 22)

As suggested by Penrose, we may expect that an allied pair or group of firms might behave

differently in the market from how a single firm does. To be sure, organizational economists have already shown that there is no such thing as “a single firm”; in their approach, firms are collections of interests and actors held together through authority, ownership, norms, and contracts. In this sense, the difference between a firm and a collection of allied firms may be a matter of degree, not of kind. For example, a firm consisting of loosely controlled units may behave much like a collection of firms in an alliance group. But we do not know this if we do not study such questions; so far, too few researchers have done so.

To avoid confusion, two definitions are in order. An “alliance” is any governance structure to manage an incomplete contract between separate firms and in which each partner has limited control (Gomes-Casseres, 1996). These structures may be more or less formal—it is the degree of incompleteness that determines whether we are dealing with an alliance, not whether or not there is a stand-alone structure to govern the relationship. In fact, alliances may be structured as complex equity joint ventures or they may be looser arrangements for cooperating in research and development (R&D) or marketing or for managing supply and sales relationships. This definition of alliance is akin to that in a line of work by Baker et al. (2002), which stresses the relational nature of the contracts between the firms.

A “constellation” is a set of firms linked together through such alliances and that competes in a particular competitive domain, that is, in a particular business, market, or technology.² In this domain, the constellation may compete against other constellations or against single firms (Gomes-Casseres, 1996). It may be a formal structure (as in airlines) or a loose arrangement of companies accustomed to working together (e.g., Starkey, Barnatt, & Tempest, 2000). My definition of constellation, sometimes also referred to as an “alliance group” (Gomes-Casseres, 1994), is akin to that in Jones, Hesterly, Fladmoe-Lindquist, & Borgatti (1998) and is related to what others have called strategic blocks (Nohria & Garcia-Pont, 1992), strategic networks (Jarillo,

1988), webs (Hagel, 1996), and business groups (e.g., Khanna & Rivkin, 2001); for a review, see Gulati (1998). My definition of constellation is more restrictive than these related concepts and closer to the constellations of Lorenzoni and Ornati (1988), who appear to have been the first to use that term, and to those of Normann and Ramírez (1993).³ Note that a constellation is not the whole network of relationships in an industry. Often, network analysis in alliance research has involved placing firms and alliances in an overall industry network and drawing inferences about a firm’s position within that network. There are many studies of this type; an early and good one is by Walker, Kogut, and Shan (1997). This is a perfectly fine approach for what it seeks to answer. But it is not the same as studying the competing networks (plural!) within an industry, which is what I claim is needed. In the language of social network analysis, I am interested here in the identities and workings of the cliques within the network rather than the network as a whole.

Conceptually, a constellation is an alternative to the single firm as a way to govern a bundle of capabilities. Ever since Penrose (1995), the firm has been defined as an administrative mechanism to govern a bundle of capabilities. I agree with this view but turn the question around: Must every bundle of capabilities be governed by a firm? The answer clearly is no—firms, constellations of firms, and no doubt other mechanisms may also be used. This argument is consistent with the view of alliances as an intermediate form of organization between market and hierarchy (Powell, 1990). It also echoes the argument by Lorenzoni and Ornati (1988) that a constellation can be a phase in the growth of small firms or in the dissolution of large firms. Normann and Ramírez (1993) argue that a constellation is an alternative way to organize a value chain, in which links between firms need not follow linearly from up- to downstream firms. The difference, then, between a single firm and a constellation lies in the location of the key capabilities used in competition: in the single firm they are all controlled by one firm; in the

constellation they are controlled by several firms that are legally independent from each other but allied with each other.⁴ Does recognizing this new unit affect our analysis of industry structures and dynamics? If so, how does the internal design of a constellation affect how it competes? And how does the role of a firm *among* and *within* constellations influence the performance of this firm?

These have not been standard questions in any field of business or economics and indeed lie on the interfaces between several fields. We are only now learning about the market behavior of allied firms, about how value is created and appropriated in constellations, and about how constellations should be managed. But we still lack a framework to analyze this kind of competition; I present one here in the hope of encouraging further research.

From Traditional to Collective Competition

The critical issues in this research agenda revolve around the interplay between alliances and rivalry. Modern analysis suggests that the relationship between competition and cooperation is complex. The rules in the *Antitrust Guidelines for Collaborations Among Competitors* of the Federal Trade Commission and U.S. Department of Justice (2000) reflect this complexity. The document contains two types of rules applying to two separate classes of concerns. One set of concerns revolves around the type of agreement between erstwhile rivals; for example, some types of agreements are seen as more conducive to collusion than others. A second set of concerns focuses on the potential effect of an alliance on market concentration; in other words, even if the partners colluded within their alliance, they may not present a threat to competition if their combined market share is relatively small. In fact, in some situations, suppressing interpartner rivalry in this way may even enhance the competitiveness of an industry, as we shall see below.

(See also Bresnahan & Salop, 1986, who attempt to construct a measure that combines these two sets of concerns.)⁵

Another way to say this is that an alliance will affect competition at two levels: *within* the alliance itself (i.e., between the partners) and *outside* the alliance (i.e., between the alliance pair and third parties). To clarify this distinction, consider the PowerPC alliance between Apple, IBM, and Motorola in the early 1990s. This alliance was intended to reduce operating-system rivalry between Apple and IBM as well as micro-processor rivalry between IBM and Motorola. But the U.S. Justice Department did not challenge this alliance, because in effect it aimed to create a stronger rival to the market leaders, Intel and Microsoft. At the level of the Apple-IBM-Motorola alliance, competition was suppressed; but at the level of the battle between PowerPC and Wintel, competition was enhanced.

These multiple levels of analysis have in fact given rise to two approaches in the literature regarding how cooperation and competition interact; here I will call them the “mixing” and “nesting” approaches.

“Mixing” Cooperation and Competition. The first approach describes what happens when competition and cooperation face each other head on. Traditionally, economics viewed the two forces as opposites—one reduces the other. As Adam Smith observed in 1776, “People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.” This view has been expanded and deepened over time; until recently, the dominant approach in economics still equated interfirm collaboration with collusion to increase market power (e.g., Baumol, 1992). A more balanced treatment, but still in this general tradition, is Stuckey’s (1983) study of the world aluminum industry—a little-known but impressive study of how industry structure generated joint ventures, and how these joint ventures in turn affected firm behavior. In this study, vertical joint ventures are

generated by transaction costs in the supply chain but also generate collusive behavior.

A more recent strand in the “mixing” literature examines competitive tensions that may persist *within* an alliance. Rather than seeing alliances as suppressing competition, as in the collusion tradition, this approach sees the two forces as intertwined inside each alliance. An example of this approach is Hamel’s (1991) “race to learn” hypothesis. This approach emphasizes that partners may continue to compete with each other in the market even while allied; even more strikingly, they may use their alliance as a way to acquire competitive capabilities from each other (Hamel, Doz, & Prahalad, 1989). Although the empirical evidence of such behavior in alliances is still thin, some good analytical models have been developed (e.g., Khanna, 1998).

A variant of this approach, formulated as a general model of strategy, is the “co-opetition” model of Brandenburger and Nalebuff (1996). The term *co-opetition* was invented by Silicon Valley entrepreneurs to describe a situation in which firms would cooperate on early R&D or on technology standards while still competing in end-product markets. In the Brandenburger-Nalebuff approach, co-opetition occurs at any interface between suppliers and buyers, or among what they call “complementors.” As such, it is used to describe various types of cooperation and competition—from battles over shares in jointly created value to battles around mutual dependence between firms. They do not apply the concept directly to alliances and indeed spend little time on concrete governance of inter-firm cooperation; but the potential for extending this approach to alliances is clear.

In all these approaches, the forces of competition and cooperation are not truly “mixed.” They meet head-to-head, so to speak, and one outweighs the other or they remain in constant tension, like oil and water. Because of this tension, rivals seeking to cooperate are often advised to *separate* the two forces in their alliance structure (Bamford, Gomes-Casseres, & Robinson, 2003, chap. 6). The well-known history of Xerox

and Fuji Xerox is a case in point. These two firms shared technology freely and cooperated on many fronts, but only because the competition between them was tightly circumscribed by territorial licensing contracts. “Good fences make good neighbors,” was their motto. Another U.S.-Japanese joint venture failed to separate areas of cooperation and competition; in the Honeywell-Yamatake alliance, interpartner rivalry eventually eroded cooperation between the partners. (Gomes-Casseres, 1996, chaps. 1 and 2.)

The second approach to competition and cooperation does not rely on trying to merge the two forces. Instead, the forces coexist in undiminished form because they meet side by side at different levels in the structure of industry.

“Nesting” Cooperation in Competition. One of the puzzles of modern collaboration is that it generates new forms of rivalry. Often, alliances seem to intensify rather than reduce competition. Adam Smith himself provided a key insight that explains this puzzle: the idea of the division of labor. He argued that factories in which workers specialized in one or a few tasks could be more productive than those in which each worker performed every task. This idea is also at the core of many alliances; frequently, each partner in an alliance specializes in what it does best, thus making the pair more competitive than the members would be each by itself.

In this view, overall competition may be enhanced even when the cooperation within the alliance suppresses rivalry. The suppression of competition is nested inside an organizational unit (the constellation) that in turn competes with other units, perhaps more fiercely than if it did not suppress internal frictions. Separating cooperation and competition in this way can thus lead to the paradox observed in modern high-technology industries: rampant use of alliances combined with cutthroat competition.

I call this kind of rivalry “collective competition” because it refers to the economic behavior of competitors that consist of more than one firm. One way to think about this new type of

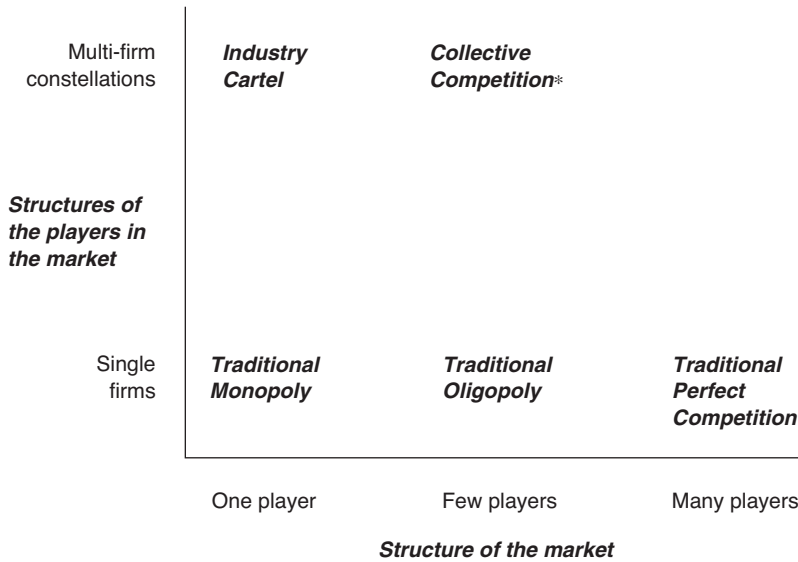


Figure 3.1 Types of Competition

(*) Note: Collective competition may also include single firms in the mix of players, as long as there are one or more constellations.

competition is by considering where it fits on the traditional market-structure continuum in classic IO models. Figure 3.1 is an admittedly oversimplified attempt to map this territory.

The horizontal axis in this figure indicates the *structure of the market*; the distinction between one, a few, or many competitors is a simplified scale reflecting traditional IO market structures. The vertical axis measures the *structures of the players* in the market, specifically, the number of firms in each economic unit. In the traditional approach, this number is always one, that is, each competitor is composed of one firm—in effect, this axis does not exist. I have argued, however, that competitive units come in varying shapes and sizes; firms are not black boxes, and competitors are not always single firms. Our mapping must take account of this fact.

Consider an obvious case of how the vertical dimension in Figure 3.1 matters. At the leftmost end of the horizontal spectrum, a multi-firm group will attempt to operate as a single player—a cartel. But there is ample evidence

that a cartel usually does not act like a true, single-firm monopolist, because of conflicts of interest among its members. A multifirm cartel is typically more fragile and can be torn apart by internal conflict. Even for the monopolist, therefore, internal structure is critical to its behavior in the market. This is all the more so for groups of firms that compete in oligopolistic markets.

In this two-dimensional figure, collective competition is a variant of oligopoly—it represents competition among “a few” constellations, perhaps also with single firms in the mix.⁶ Just as in standard oligopoly, we can expect that the behavior and performance of one constellation is interdependent with those of its rivals. We can expect that constellations display oligopolistic rivalry. Similarly, we can think about strategy in analogous terms, with constellations developing competitive advantages and implementing strategic moves. What we need, then, is a way to think about competition in this context (Silverman & Baum, 2002).

Table 3.1 Differences between Traditional and Collective Competition

	<i>Traditional Competition</i>	<i>Collective Competition</i>
<i>Competitive units</i>	Firms	Constellations
<i>Industry structure</i>	Oligopoly of firms	Oligopoly of constellations
<i>Source of competitive differentiation</i>	Firm-based advantage	Group-based advantage
<i>Valuable resources</i>	Controlled by the firm	Assembled by constellation
<i>Governance of resources</i>	Corporate structure	Constellation structure
<i>Source of profit</i>	Rent in the value chain	Rent in the constellation

Even though this figure is useful for indicating the domain of collective competition, it is obviously an oversimplification of the world. In particular, each axis measures only one dimension of, respectively, market and competitor structure. Markets are more complex than that, and so are constellations. Still, it should be clear that collective competition is *akin* to oligopolistic competition but that it differs from it by the nature of the competitive units. As a result, the dynamics of this kind of competition will likely also differ from those of traditional competition, as we shall see next.

Dissecting Collective Competition. Traditional IO and strategy concepts are good starting points for analyzing collective competition, but they need to be amended and expanded. Table 3.1 shows how to translate the concepts of the traditional model to collective competition.

Some concepts from traditional competition have clear analogs in collective competition. In the traditional model, firms are competitive units in an oligopolistic industry. In collective competition, the competitive units are constellations, and industry structure can be conceived of as an oligopoly of constellations. Several studies have used this approach explicitly. Nohria and Garcia-Pont (1992) argued that automobile firms created strategic blocks that mimicked each other's capabilities, much as oligopolistic rivals do; I

have described the strategic interaction among RISC microprocessor groups and PDA groups (Gomes-Casseres, 1996); and Suen (forthcoming) explored intergroup rivalry among airline constellations.

In a traditional oligopoly, firms rely on firm-based advantages for differentiation. In collective competition, constellations rely on group-based advantages to differentiate themselves from rivals. The resource-based view helps us think about both firm- and group-based advantages. In fact, there seems to be little in this view that requires capabilities to be controlled by firms—the chief unit of analysis is the bundle of capabilities; I have already noted that this bundle can also be controlled by a constellation. But structure does matter. In the traditional model, firms control resources through ownership and govern them through their corporate structures. A constellation assembles the resources of its members and governs these resources by the way the group is structured and managed.

This approach to defining the relevant units of competition is more relevant to some industries than to others. In some industries, such as in global airlines, major alliances are common, and it is clear that more or less formal constellations compete against others. In other industries, such as in computers, alliances may be looser, but competition is often between different standards or platforms (e.g., Katz & Shapiro, 1994).

The last element of this comparison of traditional and collective competition is the origin of a firm's profit. Simplifying again, the traditional model reasons that firms appropriate a share from the pool of rent in their value chain (Gadiesh & Gilbert, 1998; Saloner, Shepard, & Podolny, 2001). That pool of rent is influenced by industrywide pressures such as those in Porter's five-forces model. The firm earns a piece of this pool by exploiting its valuable resources or, in game-theory language, by bargaining for a share of the value-added that it brings to the pool (Brandenburger & Nalebuff, 1996).

In collective competition, the constellation becomes both a player and a mediator in the bargaining process. Given a pool of rent available in an industry segment, rivalry *among constellations* determines the rent that each group appropriates from the pool, and then bargaining *among the firms in each constellation* determines the share of the constellation's rent that each firm can appropriate for itself. This argument is analogous to the analysis of standards battles in Shapiro and Varian (1999). In sum, the model of collective competition proposed here is one of resources, control mechanisms, and bargaining power operating on at least two levels.⁷

Creation of Group Advantages. The group-based advantage of a constellation differentiates it from rival constellations and determines the share of the industry profits that it can earn. Analogous to the traditional model based on firms, group-based advantage stems from the relative value of the resources controlled by the constellation. Because constellations are groups of allied firms, the resources in the constellation are the sum of the resources contributed to the group by member firms. But these resources are not controlled as tightly as they would be inside a firm, because of the incomplete contracts (and possibly partial ownership) in the alliances that tie the member firms together. Just as in a single alliance, therefore, the potential of a constellation to create joint value is realized only by how well the constellation is structured and managed.

This idea can be illustrated with two cases already cited. The PowerPC alliance of Apple, IBM, and Motorola in fact ended in failure, in large measure because Apple and IBM could not suppress their deep-seated rivalry. In addition, the tripartite nature of the alliance did not make it easy to manage. In other words, on the face of it this group amassed a powerful set of resources that had the potential to threaten the Wintel dominance, but the alliance structure did not allow the partners to marshal these resources properly.

In the case of Xerox and Fuji Xerox, inter-partner rivalry also cost the alliance in its battle against Canon in low-end laser printers, a field in which Canon could more efficiently execute a global strategy. This case shows that the advantages of constellations as compared to firms depend critically on the competitive domain. Whereas in laser printers the single firm won out over the alliance, in the traditional copier markets, where global economies of scale were less important, the geographic and technological flexibility enjoyed by the Xerox constellation was a benefit (Gomes-Casseres, 1996, chap. 1). The flexibility of alliances is also a benefit in domains with uncertainty and rapidly changing technologies.

The potential for group advantages hence depends on the industry context and on the nature of the task facing the partners. In their study of business groups ("confederations of legally independent firms") in developing countries, Khanna and Rivkin (2001) find that firms that are members of groups are more profitable than stand-alone firms. They attribute this to the underdeveloped institutional context of these markets, which tends to make market transactions less efficient than "hybrid" transactions inside groups. Chesbrough and Teece (1996) argue that the nature of innovation (systemic vs. autonomous) helps determine whether a "virtual" organization might be an effective competitive unit.

A few papers have measured the effect of group formation on firm performance. Chen and Chen (2003) find that load factors improve in alliances

because partners with parallel (overlapping) routes are able to consolidate flights. In our language: Suppression of competition among allies allows the group to function more efficiently as a unit. Brueckner and Whalen (2000) also find that alliances in the airline industry tend to lower prices by about 25%, even if there is some evidence of collusion in markets where the allies formerly competed head-to-head. Again, collusion in overlapping markets within the alliance allows the airline constellations to offer more efficient service overall and hence lower prices in the rest of their networks.⁸

Because group design can affect market behavior of constellations, we can expect that some constellations may decide to modify their design in order to compete better in the market. Depending on the competitive pressures on a constellation, it may be forced to organize either more loosely or more tightly, for example. Airbus is a prime example—to compete better against Boeing, it reorganized itself into a tighter constellation. One obvious and important way for constellations to modify their design and their group advantage is by adding or dropping members. This kind of strategy is analogous to the “patching and restitching” of business portfolios analyzed by Eisenhardt and Brown (1999).

More generally, the competitive rivalry between partners in the market, or between partners and third parties, can either strengthen or weaken the bonds inside a constellation, as suggested by Kogut’s (1989) early work on alliances and rivalry. Gimeno (forthcoming) examined the interaction between intragroup and intergroup competition in airline alliances. In his model, the degree of cospecialization among partners inside a constellation drives the extent of rivalry and exclusivity among constellations. In related work, Rowley, Greve, Rao, Baum, and Shipilov (2004) find that complementarity among partners inside a constellation tends to diminish exit. Suen (forthcoming) points out that this kind of interdependence among partners is sometimes inherent in the nature of the industry and technology but can also be created by the mutual commitments in alliance contracts. All in all, these

studies show that there is an intimate link between the balance of cooperation and competition *within* constellations and *between* constellations.

Appropriation of Value by Members. Although constellations are created to generate group-based advantages, they must yield value to individual firms in order to attract and retain members. The game of competition may have changed, but we still keep score the old way. What determines the value that a firm can actually appropriate from participation in a constellation? Two strands of work on alliances and networks are relevant to this question. These different approaches are related to the debate in social network analysis between the roles of structural position and of identity (Nohria & Eccles, 1992).

Authors taking a structural approach have argued that the *position of the firm in a network* shapes its power over partners (e.g., Nohria & Garcia-Pont, 1991; Burt, 1992; Lorenzoni & Baden-Fuller, 1995). Rowley, Baum, Shipilov, Greve, and Rao (forthcoming) have conducted a comprehensive test of the relative effects on firm performance of (1) the group’s structural position within the industry network; and (2) the firm’s structural position inside the group. In their sample of Canadian investment banking firms, the latter matters more than the former. This suggests that the firms may have “matched” each other’s alliances and so neutralized any advantage that one group might gain over the other. Comparable patterns have been observed in automobiles (Nohria & Garcia-Pont, 1991) and in semiconductors and personal digital assistants (Gomes-Casseres, 2005).

Others have emphasized that the *scarce resources added by each firm* shape its ability to extract profit from partners (cf. Pfeffer & Salancik, 1978; Brandenburger & Nalebuff, 1996; Ghemawat, 1999). A variant of this approach is that the scarce “resource” in question can be a structural one, such as the role of a firm in setting rules of the game (Baldwin & Clark, 1997) or in fulfilling a unique role in the workings of a constellation (Iansiti & Levien, 2004). Brandenburger and Nalebuff use game theory to make the valuable

point that a firm can claim only as much value as it adds to a game. In other words, value creation and appropriation are intimately linked—firms that add great value to a constellation can also claim more value; firms that are marginally important in a constellation can claim little.

A few studies have explored the joint effect of group advantage and firm bargaining. Lazzarini (2003), for example, tried to untangle the effects of group advantages and member power in airline constellations. He finds that group organization seems to affect both sides of the coin but in different sets of circumstances. In formal, explicit constellations, the characteristics of the group seem to matter most to member firm performance; in informal, implicit constellations, firm characteristics seem to have a comparatively greater effect. Further evidence of how value creation and appropriation are intertwined comes from Gulati and Wang (2001), who find that the degree of social embeddedness of a firm affects both the amount of value it can create in alliances (a U-shaped effect), and the amount it claims (a positive effect).

To clarify some of these ideas, consider another Apple-IBM battle, this time in the early 1980s. The IBM PC was launched in 1981 by what we would today call a constellation—led by IBM, it had Intel supplying the microprocessor and Microsoft supplying the operating system. The constellation was held together by technical commitments, equity (IBM owned 20% of Intel), and contracts. As a group, this triad created the microcomputer format that within a few years drove both the Apple II and the previously dominant CPM operating system to the periphery of the market. Later, this IBM PC constellation slowly fell apart, but Microsoft and Intel went on to develop the powerful Wintel alliance. (This story is told well in many places, including in Yoffie, Casadesus-Masanell, & Mattu, 2003.)

The main lesson for us is that although this constellation created tremendous group-based advantages (it established the dominant industry standard), the firms within the constellation benefited to different degrees. IBM, it turned out, ended up with the least claim on the joint value,

even though it initiated the constellation, held a central position, and was much larger than its partners.

The key reason for this outcome lies in the nature of the resources each party contributed to the joint enterprise. In IBM's case, its resources were marketing, manufacturing, and the architecture of the product. To IBM's surprise, Compaq and a slew of IBM-clone makers were able to imitate the architecture and then out-manufacture and outmarket IBM. Intel's and Microsoft's resources, however, were protected by copyright and by the firms' efforts to block imitation and stay ahead of clones. Intel and Microsoft also benefited from competition among systems vendors; IBM had no such luck.

Managing Constellation Strategy

How can firms today avoid ending up like IBM (or worse, Apple) and have a better chance at being the Intel or Microsoft of their industry? The approach and research agenda in this chapter may help guide them. Among salient normative questions that need to be addressed in this field are the following (see also Bamford et al., 2003):

- Where in the business value chain and in the market space of the company should the alliances be formed, how many alliances should there be, and of what type?
- What should be the relationship among the various alliances and partners in the constellation?
- How will interactions among alliances of different divisions be identified and managed?
- How should the company's multiple linkages be structured; for example, should there be a loose network, a stand-alone consortium, or an equity joint venture?
- How will the company's constellation compete with rival constellations and to whom will added value ultimately flow?

Although pioneering firms have experimented with alliance constellations in many industries, we do not yet have solid conclusions about what works and what does not. Most of the managerial literature assumes implicitly that the firm is the primary unit of competition; we have seen that this view can be misleading. In businesses where collective competition is important, managers need to govern not only the activities within the strict boundaries of their firm but also their alliances and constellations outside these boundaries. Though the research on constellation strategy is still new, we can already discern a few guidelines.

First, managers need to pay attention to two sets of actions: (1) The initial design of their constellations (i.e., setting goals, choosing partners, and crafting the structure), and (2) the management of the constellation after its start-up (i.e., building relationships, adjusting plans, and making joint decisions). These broad priorities are not different from those present in an individual alliance but they are made more complex by the multiplicity of partners that may exist in a constellation.

Second, constellation designers will face a trade-off between (1) expanding the group in an effort to increase aggregate capabilities, and (2) keeping the group simple to ensure effective governance. The appropriate balance between expansion and governance will likely depend on the competitive context and on the dynamics of the emerging group.

Third, successful management of constellations also requires careful mapping of the competitive landscape and consideration of various options for membership and structure. This is not an activity that currently is regularly done by strategists in many firm. It also requires monitoring and analysis of alliances of the firm's rivals.

Fourth, for a firm to gain from participation in a constellation, it must be able to claim some of the value created by the collective. This means that it needs to control key, scarce resources or otherwise increase its bargaining power vis-à-vis other members in the group. This often raises a

catch-22 dilemma. By sharing its capabilities generously, a lead firm in a constellation can attract strong partners and perhaps erode the power of rival constellations. But this growth may well come at the cost of the firm's ability to appropriate value from its constellation.

The right time to address these issues is *before* alliances have spread too far in an industry. Alliances often spread in waves as one firm reacts to its rivals, and before long the whole industry is populated by constellations. When this happens, "strategic gridlock" can preclude new alliances and severely restrict the scope of constellation design (Gomes-Casseres, 2005). So managers need to look ahead. Although it has taken some time for research to catch up with reality in this field, it looks as if managerial practice had best heed the findings of the frontier research in this volume.

At the same time, alliance scholars need to push their research beyond traditional models and approaches. This chapter has tried to map a broad territory that to a large extent remains poorly explored. In short, we now know a lot about what alliances are and how they work as organizational mechanisms, but we still have much to learn about why and how they matter to competition in an industry.

Notes

1. In some analysis, the market as a whole is the unit of analysis, e.g., when investigating the attractiveness of an industry or the degree of competition in a market.

2. The term *competitive domain* is admittedly broad, but it serves to limit the extent of the constellation to the set of alliances that together creates a bundle of assets used in a specific competitive space. I explicitly do not want to include in the constellation *all* alliances of a firm, as alliances in different lines of businesses and different countries are often unrelated to each other competitively. (See also note 3.) Having said this, it is common for there to be overlaps among the competitive domains in which a firm operates, and so among its constellations. This simply means that

management and analysis of these constellations is more complex than otherwise; it does not change the definition itself.

3. In an excellent review, Jones, Hesterly & Borgatti (1997) offer a definition similar to mine, though perhaps a bit more restrictive in that they rule out explicit, legally binding contracts: "Network governance involves a select, persistent, and structured set of autonomous firms . . . engaged in creating products or services based on implicit and open-ended contracts." They then discuss the various forms of social control that are used in network governance.

4. The emphasis on the constellation as simply *an alternative* to the firm is intentional; I do not believe it is the "wave of the future" or that there is some inevitable progression of organizational forms, as Miles, Snow, Mathews, Miles, & Coleman (1997) appear to do.

5. The recognition that alliances, or mergers for that matter, do not necessarily reduce competition even if the number of outright competitors in a market may have diminished, has deep roots in the evolution of antitrust analysis. In the late 1970s and early 1980s traditional structure-conduct-performance models in IO began to give way to a recognition that combinations of companies might enhance efficiency by reducing transactions costs (e.g., Williamson, 1975). The position of the structuralist school was further weakened in the policy arena during the Reagan years, as antitrust authorities began to consider the pro- and anticompetitive effects of mergers and joint ventures in a more balanced way. Joint ventures in R&D, in particular, were seen as procompetitive under many conditions (see Ordover & Willig, 1985; Katz & Ordover, 1990; Jorde & Teece, 1990). Thanks to an anonymous reviewer for this point.

6. In practice, highly competitive markets seldom give rise to alliances, so the top right cell of Figure 3.1 is empty. One reason for this is that in purely competitive markets a firm need not tie up with another to gain access to its capabilities—it can usually acquire the inputs it needs from one of the multiple suppliers in the market. Put another way, the special conditions that give rise to alliances also create barriers to entry that limit the number of competitors.

7. One could generalize this model by adding levels. On one end, one can include units and individuals inside the firm, thus adding layers of resource control and bargaining within the firm; see Rajan & Zingales (2001) and Coff (1999). At the other end, layers can be added by considering the wider game

(or industry) in which the game among the rival constellations is nested (i.e., the industry segment); see Slywotzky (1996).

8. Interestingly, they also suggest that their results might change if measured in a world where *all* airlines are allied, compared with the context they observed, in which some airlines were allied and others were not. In other words, the matchup of group vs. firm may well lead to different competitive dynamics from one of group vs. group.

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